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(71) Applicants and

(72) Inventors: **GOLDBERG, Sheldon, F.** [US/US]; 3360 E. Serene, Henderson, NV 89014 (US). **DUPRAY, Dennis, J.** [US/US]; 1801 Belvedere Street, Golden, CO 80401 (US).

(74) Common Representative: **GOLDBERG, Sheldon, F.**; 3360 E. Serene, Henderson, NV 89014 (US).

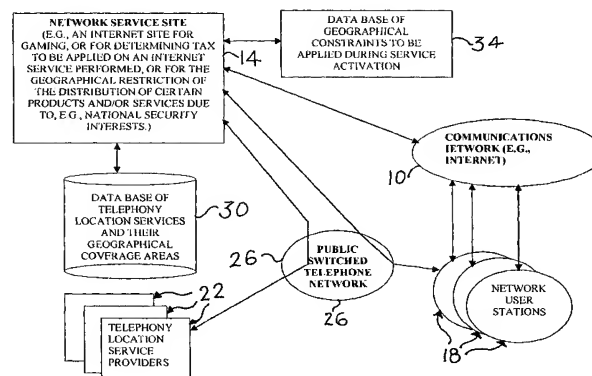
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: GEOGRAPHICALLY CONSTRAINED NETWORK SERVICES



(57) Abstract: A method and system (Figure 1) are disclosed for determining or verifying the geographic location of a user while communicating on a communications network such as the Internet (10). The user's location can be straightforwardly determined by a provider of a product or service during network communications between the user and the provider. Thus, the user's location can be determined at the time the service or product is requested by the provider. In one embodiment, to determine the location of the user's network station, the provider: (a) receives the user's phone number (or other identification for contacting the user's station), and (b) supplies the user's station with a distinctive identifier. Additionally, the provider supplies a location determining service the user's phone number (or other identification) requesting that the location determining service determine the location of the network station having the phone number. Moreover, a phone call is made to the phone number for retrieving the distinctive identifier from the network station having the phone number. If the distinctive identifier is retrieved and the location determining service indicates that the user's station is within an appropriate geographical area (or not within an inappropriate area), then the provider can provide the requested product or service to the user.



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## GEOGRAPHICALLY CONSTRAINED NETWORK SERVICES

### RELATED FIELD OF THE INVENTION

The present invention relates to verifying geographic locations of users on a communications network, e.g., for determining whether to provide a product or service to such users, and in particular, the present invention is useful for determining whether a product or service can be legitimately provided to an Internet user by determining the Internet user's geographic location when the product or service is requested.

### BACKGROUND

Geographically extensive communication networks such as the Internet are substantially viewed as being geographicless in the sense that such networks extend across substantially all national and all local country, state, and political boundaries. Accordingly, it has been difficult to monitor and/or provide certain services on networks, such as the Internet, due to the network not having sufficient capability for respecting such boundaries. Moreover, while legal statutes may cause certain network sites to be restricted in their network services due to the site's geographical location being within the jurisdiction for such statutes, other network sites outside of the area to which the statutes apply may have an unfair advantage in that the prohibited services can be offered to substantially all network users from such latter network sites. In particular, the above described general scenario applies to gambling on the Internet in that, e.g., Internet sites within the United States are prohibited, in general, from offering wagering on games such as blackjack, poker, pia gow, craps and roulette due to gambling restrictions in various U.S. states and/or counties or other legal jurisdictions.

Additionally, other communication network services are also either not available or not appropriately restricted due to the lack of being able to locate and/or

verify the locations of network users. In particular, certain software products have been determined by various governments to be restricted in their dissemination across national boundaries. Accordingly, if network users could have their locations verified, then such restrictions in the downloading of software from the Internet could be better enforced. Additionally, by verifying a location of a network user, network services could be effectively taxed according to the user's location when purchasing a network service such as the downloading of software via the Internet.

Moreover, by verifying a network user's location, a network site in communication with the user may be able to adapt its services and/or display to present to the user relevant information and services related to a geographical area within which the user is determined to be located. For example, an Internet website can utilize a verification of a user's location for selecting or prioritizing: (a) a list of additional websites offering services that are available near the user's location, and/or (b) advertising of services or products locally available to the user. Note that the verification (or more precise determination) of a user's location in the present context may be particularly important for wireless Internet users who are traveling and/or who do not know their current location. For example, providing such an Internet website for the travel industry, allows a user to access the website from different locations (via, e.g., different hotel Internet connections, or via a mobile wireless Internet connection), and subsequently select locally related advertising and other local information such as locally preferred restaurants, locations of scenic sites, a listing of local events, etc. based on the user's location and optionally the date and time (as contemplated by the present invention).

Accordingly, it would be desirable to have a network based capability for geographically verifying and/or more precisely determining the location of network users for allowing, restricting, and/or selecting network services according to each user's location.

### SUMMARY

The present invention is a method and system for determining or verifying the geographic location of a user while the user is communicating on a communications network such as the Internet. The user's location can be straightforwardly determined by a provider of a product or service requested by the user during network communications between the user and the provider. Thus, the user's location can be determined at the time the service or product is requested by the provider.

In one embodiment of the present invention, to determine the location of the user's network station (and thus locating the user), the provider: (a) receives the user's phone number (or other identification for contacting the user's station), and (b) supplies the user's station with a distinctive identifier. Additionally, the provider supplies a location determining service with the user's phone number (or other identification) requesting that the location determining service determine the location of the network station having the phone number. Moreover, a phone call is made to the phone number for retrieving the distinctive identifier from the network station having the phone number. If the distinctive identifier is retrieved and the location determining service indicates that the user's station is within an appropriate geographical area (or not within an inappropriate area), then the provider can provide the requested product or service to the user.

Thus the present invention is a location determining service for verifying, or more precisely determining, the location of users on a communications network such as the Internet. In particular, embodiments of the network based location system of the present invention combine network (e.g, Internet) services with telephony location services that are available for locating telephone users. In particular, such user location capabilities are widely used for emergency services such as 911. Moreover, enhancements in location technologies have extended the traditional landline based location services to also include users on wireless devices such as cellular or wireless telephones.

Thus, it is an aspect of the present invention, as related to the Internet, to combine: (a) Internet communications between, e.g., a website and a user with (b) additional telephony based communications between the website and the user for verifying the location of the user prior to providing and/or selecting the services that the website offers to the Internet user. In particular, the present invention transmits a unique identifier to an Internet user whose location is to be verified, and subsequently causes the Internet user to place a conventional telephony call to a predetermined phone number for transmitting the identification (provided in the initial Internet transmission to the Internet user). Subsequently, upon picking up the call placed by the Internet user to the predetermined number, the callee (e.g., the website) captures both the Internet user's telephone number and the transmitted identification. The transmitted identification is used to retrieve previously stored information about the Internet user, and in particular, a user's previously input general geographical location (e.g., the country, state or city within which the user has indicated he/she is

located), and associate the user information with the Internet user's captured phone number.

Subsequently, the user's general location is used to identify a telephony location providing service having coverage for the user specified general geographical area of the Internet user for thereby determining or verifying a relatively precise location of the user, and providing this information to the website so that appropriate services can be selected for providing to the Internet user.

Other features and benefits of the present invention will become evident from the accompanying drawings and the detailed description herein below.

#### BRIEF DESCRIPTION OF DRAWINGS

Figure 1 is a block diagram showing the high level components used in an embodiment of the present invention wherein the communications network is, for example, the Internet.

Figures 2A and 2B provide a flowchart of the high level steps performed at a network service site (e.g., an Internet website), and at a user's network station for verifying the location of the user.

#### DETAILED DESCRIPTION

Figure 1 shows a high level diagram of the components used in an embodiment of the present invention. Accordingly, a communications network 10, such as the Internet, is used for providing network based services between a network service site 14 and one or more network user stations 18 whose locations are desired to be verified (or determined) one or more times by the network service site 14.

Additionally, one or more telephony location service providers 22 are in communication with the network site 14, via one or more public switched telephone networks 26, wherein the network service site 14 provides the telephone numbers of users (at their stations 18) who are to have their locations determined. Accordingly, the telephony location service providers 22 respond with locations of the network users. Note that such telephony location service providers 22 are currently available for providing the location of telephony subscribers for emergency services such as 911. Moreover, various technologies have been developed for also verifying the location of users on cellular or wireless phones such as global positioning location technologies, time difference of arrival triangulation technologies, angle of arrival technologies, and multipath pattern matching technologies for wireless signals as one skilled in the art will understand. Moreover, as one skilled in the art will also understand, the automatic location identification (ALI) currently used for emergency 911 services can also be used for providing location services to other location requesters such as the network service site 14.

The network service site 14 also accesses a database 30 of telephony location service providers 22, wherein the database associates each location service provider with their corresponding geographical coverage area for providing locations of users. This database is used to select an appropriate location service provider 22 given the general area which in the network user has indicated he/she is located. Additionally, the network service site 14 also accesses a database 34 having any geographical constraints to be applied during service activation with a user once the user's location has been verified (e.g., gambling wagering limitations according to the user's location). Moreover, note that in addition to geographical constraints, the database

34 may also include geographically associated advertising and additional information to provide to the user depending upon the user's verified location.

A general high level flowchart illustrating the steps performed by the present invention is provided in the flowchart of Figures 2A and 2B. Note that this flowchart describes the steps performed when a network user request a particular service.

However, as one skilled in the art will understand, similar a flowchart can be provided for substantially unrequested services as advertising of locally available products and/or services.

The foregoing discussion of the invention has been presented for purposes of illustration and description. Further, the description is not intended to limit the invention to the form disclosed herein. Consequently, variations and modifications commensurate with the above teachings, and within the skill and knowledge of the relevant art, are within the scope of the present invention. The embodiments described hereinabove are further intended to explain the best mode presently known of practicing the invention and to enable others skilled in the art to utilize the invention as such, or in other embodiments, and with the various modifications required by their particular application or uses of the invention. It is intended that the appended claims be construed to include alternative embodiments to the extent permitted by the prior art.



## CLAIMS

What is claimed is:

1. A method for determining the location of a user requesting services from a network site of a communications network, comprising:

receiving, at the network site, user information for identifying the user, and a first approximate location of the user;

5 determining, using the first approximate location of the user, a location service provider providing coverage for the first approximate user location;

causing the user's network station to call a predetermined telephone number for identifying the user;

receiving the user's call at the predetermined telephone number, and: (a)

10 capturing the user's telephone number, and (b) obtaining identification information for identifying the user;

transmitting the user's telephone number to one of the telephony location service providers selected for determining a location of the user;

receiving from the selected telephony location service provider, a more

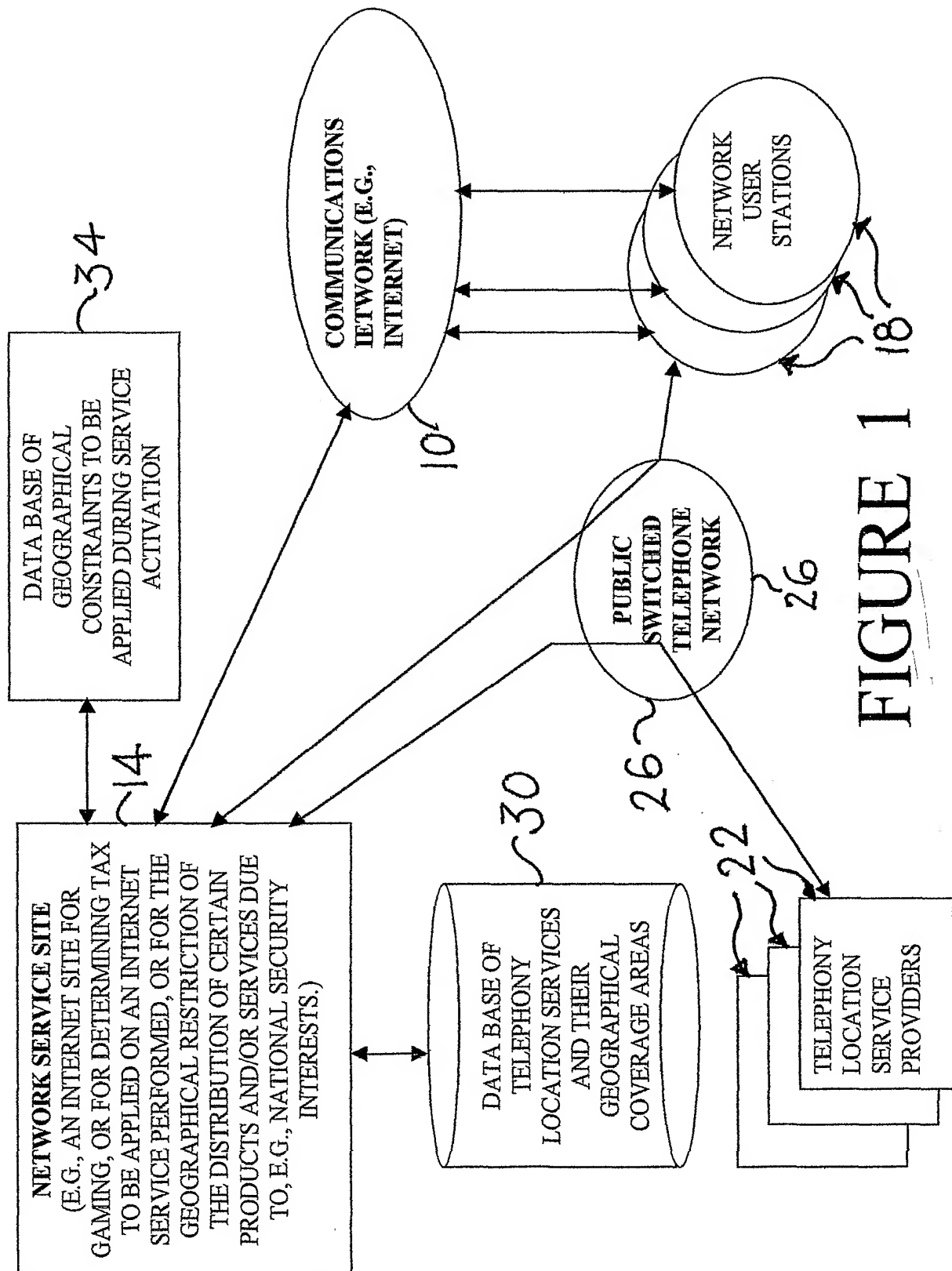
15 precise location of the user; and

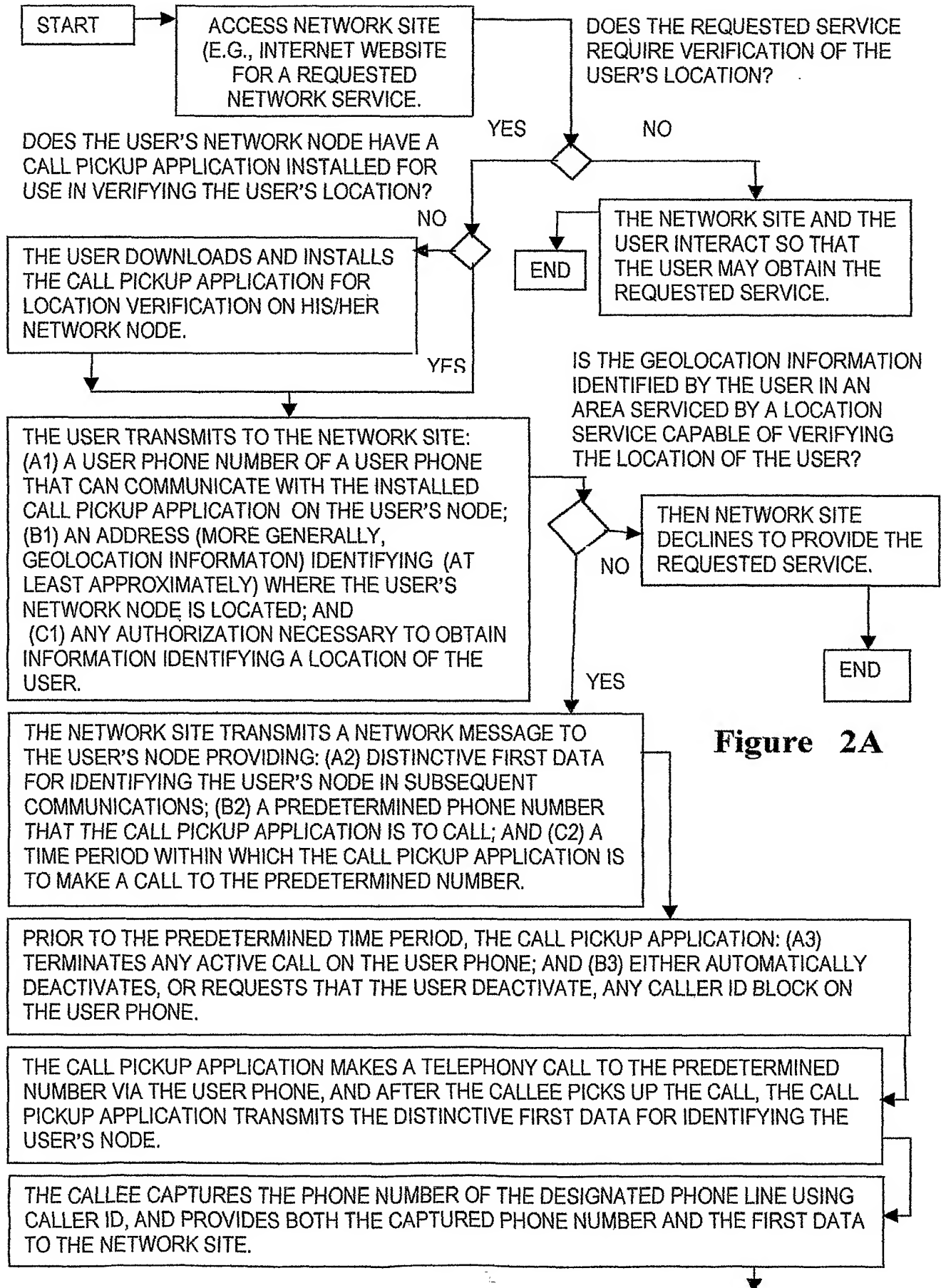
determining services to be provided to the user on the communications network according to the more precise location.

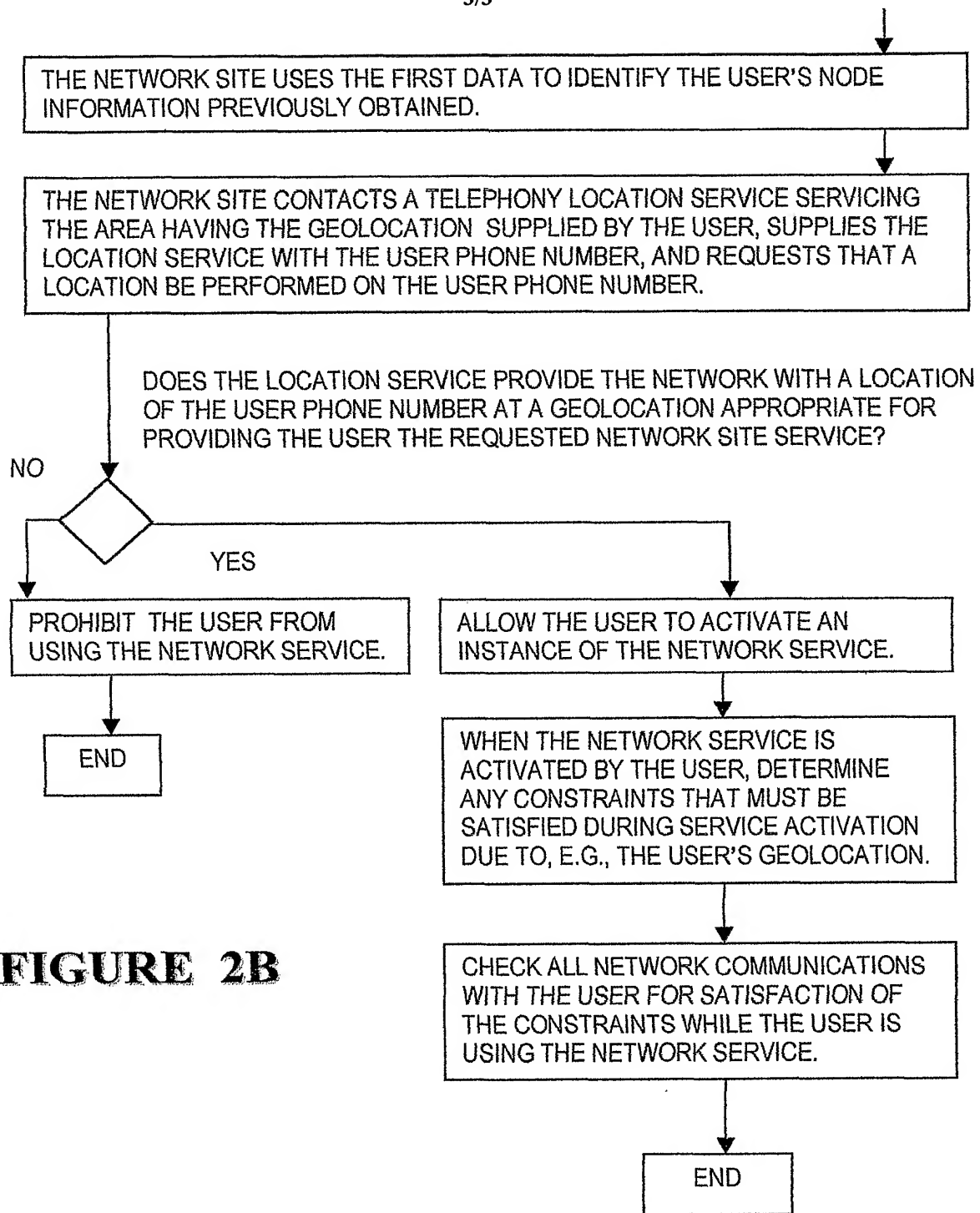
2. The method as claimed in claim 1, wherein the services for providing

20 to the user includes one or more of: gambling services, taxation services, services for

the distribution of software, advertising presentations, and information related to locations within the user's local that the user is expected to find of interest.



**Figure 2A**

**FIGURE 2B**

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/40989

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A63F 9/24

US CL : 705/14

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/14

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,618,232 A (MARTIN) 8 April 1997 (08.04.99), all	1-2
A	US 5,816,919 A (SCAGNELLI et al.) 6 October 1998 (06.10.98), all	1-2
A	WO 97/26061 A1 (GOLDBERG et al.) 24 July 1997 (24.07.97), all	1-2
A	WO 98/30297 A1 (ALCORN et al.) 16 July 1998 (16.07.98), all	1-2
A, P	US 6,104,815 A (ALCORN et al.) 15 August 2000 (15.08.00), all	1-2

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

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"E" earlier application or patent published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

06 February 2001 (06.02.2001)

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Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

James Trammell

Telephone No. 703.305.3900

*Peggy Hamood*

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/40989

**Continuation of B. FIELDS SEARCHED Item 3:** EAST - (telephone or telephony) and internet and (geographical or location) and (gambling or taxation)

DIALOG